

KAGEYAMA, et al., 09/932,113
04 January 2006 Amendment
Responsive to 04 October 2005 Office Action

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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-3 (Cancelled)

Claim 4 (Previously Presented) An image display apparatus comprising:

image display means including a pixel in a region near an intersection at which each of signal lines and each of scanning lines are intersected each other, said signal lines and said scanning lines being arranged in a matrix, and said pixel being connected to said signal line and said scanning line via an switch element;

a group of gradation voltage lines to provide analogue gradation voltages in accordance with display gradations;

decoder means for producing switch drive signals by which any one of said gradation voltage lines is selected in accordance with digital high-gradation image data;

trigger signal output means for sequentially producing trigger signals in accordance with said image data; and

a plurality of switch means, coupled to receive said switch drive signals and said trigger signals, for selecting a specified gradation voltage line in response to said switch drive signals under condition in which said trigger signals are inputted to said switch means, to supply a gradation voltage from said specified gradation voltage line to a specified signal line.

Claim 5 (Original) An image display apparatus according to claim

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4, wherein said group of gradation voltage lines are arranged in parallel along said plurality of switch drive lines.

Claim 6 (Original) An image display apparatus according to claim 4, wherein one of said switch drive lines is arranged in parallel with one gradation voltage line of said group of gradation voltage lines.

Claim 7 (Original) An image display apparatus according to claim 4, wherein two switch drive lines of said switch drive lines are arranged in parallel on both sides of one gradation voltage line of said group of gradation voltage lines.

Claim 8 (Previously Presented) An image display apparatus comprising:
image display means including a pixel in a region near an intersection at which each of signal lines and each of scanning lines are intersected each other, said signal lines and said scanning lines being arranged in a matrix, and said pixel being connected to said signal line and said scanning line via a switch element;
a group of gradation voltage lines to provide analogue gradation voltages in accordance with display gradations;
decoder means for producing switch drive signals by which any one of said gradation voltage lines is selected in accordance with digital high-gradation image data;
trigger signal output means for sequentially producing trigger signals in accordance with said image data; and

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a plurality of switch means, coupled to receive said switch drive signals and said trigger signals, for selecting a specified gradation voltage line in response to said switch drive signals under condition in which said trigger signals are inputted to said switch means, to supply a gradation voltage from said specified gradation voltage line to a specified signal line.

Claims 9 and 10 (Cancelled)

Claim 11 (Original) An image display apparatus according to claim 8, wherein said group of gradation voltage lines and said plurality of switch drive lines are made of a wiring material of aluminum or copper.

Claims 12-16 (Cancelled)

Claim 17 (Previously Presented) An image display apparatus comprising:
image display means including a pixel in a region near an intersection at which each of signal lines and each of scanning lines are intersected each other, said signal lines and said scanning lines being arranged in a matrix, and said pixel being connected to said signal line and said scanning line via an switch element;
a group of gradation voltage lines to provide analogue gradation voltages in accordance with display gradations;
decoder means for producing switch drive signals by which any one of said gradation voltage lines is selected in accordance with digital high-gradation image data;

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trigger signal output means for sequentially producing trigger signals in accordance with said image data; and

a plurality of switch means, coupled to receive said switch drive signals and said trigger signals, for selecting a specified gradation voltage line in response to said switch drive signals under condition in which said trigger signals are inputted to said switch means, to supply a gradation voltage from said specified gradation voltage line to a specified signal line.

Claim 18 (Original) An image display apparatus according to claim 17, wherein each of said plurality of switch means includes a condenser for holding said switch drive signal produced from said first thin film transistor.

Claim 19 (Original) An image display apparatus according to claim 18, wherein said condenser is an electrostatic capacity formed by overlapping any one gradation voltage line of said group of gradation voltage lines and an electrode formed in a wiring layer different from said group of gradation voltage lines.

Claim 20 (Original) An image display apparatus according to claim 17, wherein each of said plurality of switch means includes memory means for storing said switch drive signal produced from said first thin film transistor as at least one-bit information.

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Claim 21 (Original) An image display apparatus according to claim 17, wherein said plurality of switch means are disposed in regions near intersections at which said switch drive lines and said trigger lines are intersected each other, respectively.

Claim 22 (Original) An image display apparatus according to claim 17, wherein said first thin film transistor and said second thin film transistor are formed using n-channel thin film transistors when the gradation voltage on said gradation voltage line is relatively smaller than a signal voltage on said switch drive line, and are formed using p-channel thin film transistors when the gradation voltage on said gradation voltage line is relatively higher than the signal voltage on said switch drive line.

Claim 23 (Original) An image display apparatus according to claim 17, wherein each of said plurality of switch means includes voltage level conversion means for amplifying said switch drive signal.

Claim 24 (Original) An image display apparatus according to claim 23, wherein wiring lines for supplying a particular voltage and a common signal to said voltage level conversion means are arranged in parallel in said group of gradation voltage lines.

Claims 25-30 (Cancelled)

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Claim 31 (Previously Presented) A method of driving an image display apparatus comprising:

image display means including a pixel in a region near an intersection at which each of signal lines and each of scanning lines are intersected each other, said signal lines and said scanning lines being arranged in a matrix, and said pixel being connected to said signal line and said scanning line via an switch element;

a group of gradation voltage lines to provide analogue gradation voltages in accordance with display gradations;

decoder means for producing switch drive signals by which any one of said gradation voltage lines is selected in accordance with digital high-gradation image data;

trigger signal output means for sequentially producing trigger signals in accordance with said image data; and

a plurality of switch means, coupled to receive said switch drive signals and said trigger signals, for selecting a specified gradation voltage line in response to said switch drive signals under condition in which said trigger signals are inputted to said switch means, to supply a gradation voltage from said specified gradation voltage line to a specified signal line.

Claim 32 (Original) A method according to claim 31, wherein

a number of simultaneous data switching for a gradation data inputted to said decoder means is two or less; and

said decoder means sequentially produces switch drive signals for selecting one single switch drive line in accordance with said gradation data.